



The development of an emotion lexicon for the coffee drinking experience



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ABSTRACT

Consumer products are perceived via sensory aspects that stimulate emotional responses. A small number of emotion lexicons for food have been developed, and these emotion instruments for general consumption experience might not uncover the deeper and distinct emotions created by specific products, especially those consumed primarily for pleasure (e.g., coffee). The objective of this study was to develop an emotion lexicon that could be used to identify and describe feelings that occur during coffee drinking. In the first part of the study, focus groups of coffee drinkers were held to generate emotion terms related to coffee drinking. The terms generated were further refined by 48 coffee drinkers using check-all-that-apply scale with two coffee samples. The final list comprised of 86 items, 47 generated by coffee drinkers and 39 terms from the Essence Profile® (King & Meiselman, 2010). In the second part, six coffees were tested with 94 consumers using the developed lexicon. The emotion questionnaire was administered twice – before and during coffee drinking on a 5-point scale. Overall acceptability of the samples was also asked in the study. The consumers were clustered into 6 clusters using the overall acceptability scores. Stepwise regression analysis with forward selection was done on the entire data set, by each consumer cluster, and by each coffee sample to identify the important emotion terms, which resulted in the selection of 44 emotion terms out of which 17 terms were from the Essence Profile®. It is evident that a complex product like coffee may need a specific emotion lexicon to uncover more information about how different coffee samples impact emotional responses in diverse coffee drinkers.

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1. Introduction

With the competitiveness in the market today, it is no longer sufficient to evaluate product performance only by measuring overall liking on the sensory properties of a product. The level of emotional responses elicited by the sensorial experience during the product consumption is also vital. Today's consumer seeks emotional experiences they receive from a product via sensory perception (Thomson, Crocker, & Marketo, 2010), and recently researchers have become more aware of the connection between the sensory perception and the emotional experiences elicited during product consumption. King and Meiselman (2010) created and validated an emotion measuring instrument – EsSense Profile™ (ESP) scale developed by them. They used the scale on various food products and were able to discriminate among different categories and also those within the same category. The ESP consists of 39 emotion terms related to general food consumption and is currently being utilized by emotion researchers. Cardello et al. (2012) used the ESP to measure emotional response to foods (actual tasting) and

compared them to responses elicited by food names (no tasting). They found a positive correlation ($r = +0.66$ to $+0.83$) between both the two experimental protocols. Another instrument, Geneva Emotion and Odor Scale (GEOS) was developed to measure affective feelings that respond to olfactory stimulation in a French speaking population (Chrea et al., 2009). GEOS contains 36 emotion terms classified into six dimensions: sensuality, relaxation, pleasant feeling, refreshment, sensory pleasure, and unpleasant feeling.

Currently, the emotion scales available to researchers were developed for general food and beverage consumption. However, consumers seek different sensory experiences from food products, and preferences for these sensations could change depending on time of day, situation, cultures and tradition, or context of consumption (Chrea et al., 2009; Hartel & Hartel, 2005; Herz, 2005; Labbe et al., 2009; Russell, 1991; Scherer, 2005). Even different food varieties from the same category provide individuals with a wide range of sensory stimulations that arouse different emotions. Considering the uniqueness of distinct foods and beverages, it is plausible that an emotion scale especially developed for a specific product may be able to provide more in-depth information on the deeper emotions underlining the consumption experiences.

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Coffee is one of the most popular beverages, enjoyed by most cultures, and currently United States is the largest importing coffee market in the world. According to the International Coffee Organization[®], 1.33×10^9 kg of coffee was consumed by Americans in 2012, which was over half (~55%) of the entire coffee consumption of all European Union countries (2.44×10^9 kg). In 2012, the US imported 2.6×10^7 bags of coffee that represented 24% of total world imports (International Coffee Organization, 2013). It is evident that coffee has become an important part of an American's routine. To have a better understanding of coffee consumers' acceptances and consumption behaviors, it is critical to explore the emotions elicited by the different sensory characteristics of various coffee beverages. The emotions that occur during the coffee drinking experiences should therefore be identified and measured. In this study, this was accomplished by developing and refining an emotion lexicon elicited by coffee drinking through a sequence of two experiments.

2. Experiment 1: development of the initial lexicon

2.1. Identifying emotions related to coffee drinking

Five, 60-min mini-focus groups (quads) were conducted at local coffee shops in Manhattan, KS, USA. Participants for the focus groups were selected based on their weekly coffee consumption frequency. For the purpose of this study, those who drank coffee at least once daily and visited a coffee shop at least once a week were classified as 'heavy users.' Those who drank coffee 3–5 times a week were classified as 'medium users,' and those who drank coffee 1–2 times a week were classified as 'light users.' Heavy users were grouped into four quads (four participants in each quad). The fifth quad was comprised of two light and two medium coffee drinkers. Light/medium users were included to provide a complete perspective of the emotions experienced by most segments of coffee drinkers.

To identify the emotion terms related to coffee drinking, the discussion was focused on different types of coffee drinking experience. Coffee experiences were segmented into four situations based on locations at which consumers drink coffee beverages: coffee shop/restaurant, home, office/work, or on-the-go (i.e., drive-thru, vending machine, convenience stores). The moderator began the sessions by asking participants to identify their favorite cup of coffee beverage and reasons for liking. They were required to think about the emotions they feel when drinking a 'good' versus a 'bad' cup of coffee, then focus on the drinking experiences at specific locations (home, the coffee shop/restaurant, work, or on-the-go). Participants discussed drinking habits at specific locations, coffee selection criteria, and reasons why they chose to drink coffee from/at certain locations. The moderator asked each participant to describe drinking experiences at that particular location, including good, bad, most enjoyable, and worst experiences to capture all of the possible emotions triggered by various coffee types, situation, and experiences.

Two additional 90-min focus group sessions with heavy users were conducted at the Sensory Analysis Center, Kansas State University, Manhattan, KS, USA, to determine the appropriateness of terms collected in the mini-focus groups. Both focus groups were comprised of six participants each. Coffee was provided to participants, but drinking was optional. The emotion terms generated by the five mini-focus groups and words from the ESP (King & Meiselman, 2010) were combined into one list and were presented to participants in both focus groups. Discussion began with the moderator asking participants to reflect on their favorite coffee beverage, and mark the emotion terms from the list that they thought were associated with their experiences. Next, the participants were asked to remember bad experiences with coffee (time they received a 'bad' cup of coffee) and highlight emotion terms that represented those feelings. Last, the moderator asked participants to think about their regular, everyday experiences with the coffee they drink on a daily basis; then highlight terms for those feelings.

Participants were also instructed to write down any other emotion terms they believed described their coffee drinking experiences, but was not on the list. Each adjective was tallied and the discussion focused on the coverage of emotion terms chosen, redundancy of terms, clarity of meanings, and appropriateness of any additional terms provided by the participants. Finally, the groups were asked to discuss the coffee drinking experience at home, coffee shop, work, and on-the-go in order to generate any additional emotion terms that may have been overlooked. A list of 118 emotion terms was obtained (Table 1) including all of the 39 terms from the ESP (King & Meiselman, 2010).

2.2. Selecting terms for the consumer test

A group of medium and heavy coffee users ($n = 48$) were recruited to select relevant terms (for experiment 2) that described the emotions related to coffee drinking while drinking 2 coffee samples. Medium users were also included at this stage to achieve a broader segment of coffee consumers. Check-all-that-apply (CATA) method (Ares, Barreiro, Deliza, Gimenez, & Gambaro, 2010; Dooley, Lee, & Meullenet, 2010) was used to record the responses. CATA offered the identification of various emotions experienced by coffee users of different preferences. The use of a smaller number of consumers with CATA method was utilized because the objective was to capture the pertinent emotions related to coffee drinking. At this stage a large consumer evaluation was not necessary to achieve the objective of terminology selection for a larger consumer test (experiment 2).

2.3. Sample serving

Two coffee samples were used to represent light and dark roast varieties: Starbucks Coffee® Breakfast Blend (Starbucks Coffee Company; Seattle, WA, USA) and Dunkin' Donuts® Dark Roast (The Procter & Gamble Company; Cincinnati, OH, USA). Each coffee was brewed separately (model 169058 coffee maker; General Electric Company, Fairfield, CT, USA) according to the user manual. Reverse osmosis, de-ionized, carbon-filtered water was used, and each brewed coffee was filtered through Melitta coffee filter #4 (Melitta USA, Inc.; Clearwater, FL, USA). Fresh coffee samples were brewed during each session and served within 5 min of brewing. Coffee was served in individual 165 mL ceramic cups with a saucer (Econo Rim, Syracuse China; Lyncourt, NY, USA), individual packets of half & half (Land O'Lakes Half & Half UHT

Table 1

A list of 118 emotion terms obtained from the focus group interviews.

Active	Cozy	Fun	Motivated	Safe
Adventurous	Cultured	Glad	Nervous	Satisfied
Affectionate	Curious	Good	Nostalgic	Secure
Aggressive	Daring	Good-natured	Obligated	Sick
Alert	Depressed	Grouchy	Off-balance	Simple
Angry	Desirable	Guilty	Peaceful	Social
Annoyed	Different	Guilty pleasure	Pleasant	Soothing
Anticipated	Disappointed	Habit	Pleased	Special
Assured	Disgusted	Happy	Polite	Spontaneous
Attentive	Eager	Home	Powerful	Stable
Awake	Educated	Impulsive	Productive	Steady
Balanced	Empowering	In control	Put-together	Stressful
Betrayed	Energetic	Independent	Quiet	Surprised
Boosted	Enthusiastic	Interested	Ready	Tame
Bored	Excited	Intrigued	Relaxed	Tender
Buzzed	Experimental	Jittery	Relieved	Tired
Calm	Familiar	Jolted	Reminisce	Tolerated
Clear minded	Family	Joyful	Rested	Understanding
Collected	Festive	Jump start	Rewarded	Upset
Comfortable	Focused	Lazy	Risky	Warm
Comforted	Free	Lost	Ritual	Whole
Complete	Friendly	Loving	Routine	Wild
Confused	Frustrated	Merry	Sad	Worried
Content	Fulfilled	Mild		

The terms in bold are from the ESP scale.

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